

BRIEFER ARTICLES

NOTES ON CLEISTOGAMY OF GRASSES

(WITH FIVE FIGURES)

The genus *Triplasis* Beauv., so far as we can find, has not been recognized as one of the many genera of grasses producing cleistogamous spikelets. Its nearest relative recognized as having this habit is *Sieglingia decumbens* (L.) Ktze. This and other cleistogamous grasses are discussed by Professor EDUARD HACKEL (Oest. Bot. Zeits. 56:81-88, 143-154, 180-186. 1906). Specimens of *Triplasis* in the National Herbarium collected in autumn show reduced panicles wholly or partly included in the sheaths, and bearing few to several cleistogamous spikelets with glumes and awns much reduced, but otherwise like those of the terminal panicle.

Specimens of *T. purpurea* (Walt.) Chapm. collected on the low dunes of the Isle of Palms, S. C., October 18, 1907 (*Chase* 4524), show an additional form of cleistogamous spikelet. This is larger, solitary, and sessile in the base of an indurated prophyllum, in the wings of which it is clasped together with the first internode of the branch, lying between the branch and the back of the prophyllum. The glumes are wanting, repeated dissections failing to show even traces of them. The spikelets are one-flowered, or sometimes have a rudimentary second floret; the lemma and palea are thin, the awn of the lemma and beard of the palea much reduced. (The figures show the difference between this spikelet and one from the terminal panicle, also the comparative size of the two developed grains.) This second form of cleistogene was discovered in the field, and plenty of material for dissection was collected. Most of the culms produced two to eight or nine of these spikelets, beginning usually at the second node. The spikelets in the upper sheaths have smaller florets and rudimentary glumes, and grade into the ordinary form of cleistogene. Since herbarium material cannot be ruthlessly disjointed, only a few sheaths of autumnal specimens, which by their swollen appearance gave promise of containing these cleistogenes, were examined. Of these, one specimen of *T. americana* Beauv. from Florida (*Combs* 871) showed this form, the glumes wanting, the awn, which in this species is 5^{mm} or more long, nearly obsolete. A duplicate

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type of *T. intermedia* Nash (*Nash 2426*) was found to contain these cleistogenes, and judging by the swollen sheaths they were abundant. This is true also of specimens of the same species from Cape Florida (*Chase 3959*). Of *T. purpurea* (Walt.) Chapm., practically all the late collections contained



FIG. 1. Base of internode showing prophyllum inclosing cleistogamous spikelet. $\times 4$.—FIG. 2. Cleistogamous spikelet. $\times 8$.—FIG. 3. Grain from same. $\times 8$.—FIG. 4. Spikelet from terminal panicle. $\times 8$.—FIG. 5. Grain from same. $\times 8$.—Both spikelets drawn from the same plant.

these spikelets. Hence this habit of producing two forms of cleistogene belongs to the entire genus. Unlike the dichotomous species of *Panicum*, in which only the cleistogenes perfect their grains, the terminal spikelets are fruitful in *Triplasis* as well as the two forms of cleistogene. The presence of these cleistogenes at the nodes explains the habit, common to the three species, of disjointing at the lower nodes when dry.

Another interesting point in the habit of cleistogamous grasses developed in the field-work of last October. *Amphicarpon amphicarpon* (Pursh) Nash was found with perfectly developed grains in the aerial spikelets. These specimens were collected in the border of a cypress swamp between Wilmington and the eastern coast of North Carolina (*Chase 4597*). After

noting these fruitful spikelets, practically all the plants in the small colony were examined, perhaps a hundred, and about fifteen were found with fruiting aerial spikelets. Most of these possessed developed subterranean spikelets also. The aerial spikelets have heretofore been supposed to be sterile. The earlier authors—PURSH, who first described the species under *Milium*, KUNTH, and BENTHAM—called them staminate and the subterranean spikelets pistillate. It is doubtless very seldom that these aerial spikelets develop their grains. Herbarium material was examined and a single specimen of *A. amphicarpon* from Delaware (*Commons 18* of 1895) was found with fertile aerial spikelets. No such spikelets were found in *A. floridanum* Chapm.—AGNES CHASE, *U. S. Department of Agriculture, Washington, D. C.*